LINEAR PERSPECTIVE ILLUSTRATIONS AS A MEANS OF INTERPRETING SPACE FOR THE BLIND

A Field Report

Presented to

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Drake University

In Partial Fulfillment

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Master of Fine Arts in Art Education

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by

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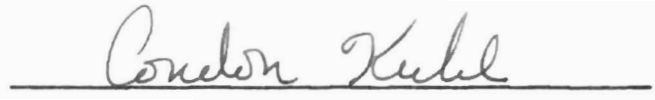
Approved by Committee:



Dean of the Graduate Division

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER I

INTRODUCTION

A major problem of the visually handicapped, according to educators of the blind, is an understanding and comprehension of depth and space. Ease of movement and independence is limited because of the unknown.

Printed communication of ideas has been accomplished for the sightless through the embossed surface methods as used in Braille and Moon books. Additional methods of communicating ideas to the blind have been added in recent years through recordings, tapes and now through raised surface maps.

The sighted are able to interpret depth and space through illustrations as presented in perspective drawings made on two dimensional surfaces. Similar presentations of perspective through embossed surfaces may also help to solve the problem of depth and space interpretation for the blind.

This paper is an attempt to find if such an idea might be feasible, what research has been done on the subject in the past, and the processes that might be used in a solution to the problem. If blind persons can be taught to share more of the aesthetic experiences enjoyed by

the sighted, their scope of interests will be greatly increased.

I. THE PROBLEM

Statement of the problem. "The blind man demands to be a human being whose reserve faculties can be developed to compensate for the visual handicap. The big challenge to those who work with the blind is to fulfill such hopes."[1] This statement was made by Paul A. Zahl in a report to the Department of Medicine and Surgery, United States Veterans Administration, and the Surgeon General of the Army for the Committee on Sensory Devices of the National Research Council.

In accepting this challenge, this study has been made in an attempt to discover methods, through artistic means, for a better understanding of space and depth perception for those who are visually handicapped. This is but a start in the study of the basic elements of art which include space, line, color, texture and form.

Importance of the study. "Educational programs for visually handicapped children have been hampered from the

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[1] Paul A. Zahl, Blindness: Modern Approaches to the Unseen Environment (Princeton: Princeton University Press, 1950), Preface.

start by a shortage of special equipment, books, and materials."[1] Experiences of the visually handicapped children are limited. Since they are unable to see and relate ideas, their concepts of a given experience may be erroneous. "It cannot be assumed that their knowledge of facts and experiences, which those with average sight acquire through incidental learning, are the same."[2]

"In order to acquire knowledge of facts and experiences, the blind must depend on his other senses as well as people."[3] The more stimulation he receives the more information he can assimilate.

Purpose. This field report has been an attempt to find ways to help the blind become better educated to the vast amount of knowledge surrounding them. In doing this the writer will try to ascertain the feasibility of linear perspective for the visually handicapped. A group of blind students will be used in a pilot study. Findings of others and benefits of this study will be determined and analyzed.

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[1]John Walker Jones, The Visually Handicapped Child at Home and School (Washington, D.C.: United States Printing Office, 1963), p. 22.

[2]Ibid., p. 45.

[3]Charles Gibson and others, "The Use of the Raised Map in Teaching Mobility to Blind Children," The New Outlook for the Blind, LIX (February, 1965), 59.

Need for such a study. Authorities in the field of education for the visually handicapped know of little research which has been done on the subject of depth, or space, interpretation.

Dr. Carson Noland, Director of Research at the American Printing House in Louisville, Kentucky, referred to works by Ralph Merry, in which Merry stated:

> The writer frequently has been asked by seeing persons if it is possible for blind children to recognize through the sense of touch simple pictures which are suitable embossed. Such questions are difficult to answer since there appears to be little or no experimental evidence on the subject, and opinions differ widely.[1]

Although this does not refer directly to perspective illustrations, the idea is similar.

Dr. Donald Blasch of Western Michigan University in Kalamazoo, Michigan, and his associates, Miss Ruth Kaarlels and Dr. Stanley Suterko, knew of little research which had been done on the subject. Dr. Blasch indicated that perspective would be more beneficial as a teaching aid for mobility instruction than for self instruction in space concepts. However, they felt that it would be very difficult to teach the concept of space, especially to those who had been blind since birth.

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[1] Ralph Merry, "To What Extent Can Blind Children Recognize Tactually, Simple Embossed Pictures," The Teachers Forum for Instructors of Blind Children, III (September, 1930), 2-6.

Dr. Herbert J. Burgart, Chairman of the Art Department at George Peabody College for Teachers in Nashville, Tennessee, has worked with Dr. Berthol Lowenfeld, a specialist in education of blind children. He indicated that there had been some experimental work done in perspective with blind children with little success.

In discussing the matter of art education with Mrs. Chris Jensen, a former student of the blind teaching program at the University of Minnesota, it was indicated that she knew of no perspective illustrations being used in teaching the blind or textbooks on art with bas-relief illustrations. This information, also, had been expressed by Mrs. Florence Grannis, librarian for the Iowa Commission for the Blind in Des Moines, Iowa.

II. HISTORY OF EDUCATION OF THE VISUALLY HANDICAPPED

Organized education for the visually handicapped was started in Paris in the year 1785 by Valentine Hauy when the National Institute for the Young Blind was opened. It was not until the year 1826, after a visit to Paris by Dr. John D. Fisher, that steps were taken to make education for the blind available in this country. The first institution in America was founded on March 2, 1829, and was known as the New England Asylum for the Blind. It was

located in Boston, Massachusetts, and is now known as Perkins Institute and Massachusetts School for the Blind.

Ohio established a state tax-supported school for the blind in the year 1837. Most states followed by establishing similar schools throughout the country. "By 1900 the number of special schools had grown to thirty-eight and in 1962 it exceeded fifty. Enrollment in these schools had risen to more than seven thousand five hundred children."[1]

Early attempts were made to help the visually handicapped establish communications through "reading". In 1829 Louis Braille invented "a system for printing or transcribing for the blind in which the characters were represented by raised dots."[2]

Later in 1847 Dr. William Moon created "nine simple characters set up in different formations which resulted in an alphabet that was easy to read and also legible to the eye."[3] His first Moon book appeared in that year.

"When Dr. Moon died in 1894, books in his type were printed in four hundred and nineteen languages and dialects.

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[1]John Walker Jones, The Visually Handicapped Child at Home and School (Washington, D.C.: United States Printing Office, 1963), p. 30.

[2]A. Merriam-Webster, Webster's New Collegiate Dictionary (Springfield: G. and C. Merriam Company, 1949), p. 102.

[3]Gabriel Farrell, The Story of Blindness (Cambridge: Harvard University Press, 1956), p. 103.

Newly blind found this type easier to master than Braille."[1] However, at the present time Braille is the universally accepted means of communication through books for those who are visually handicapped. No reason could be found by this author for the preference of Braille to the Moon system.

In 1932 a uniform Braille system known as the Standard English Braille was adopted by all English speaking countries. Before this, however, "for over one hundred years there had been a constant change in the form of embossed writing."[2]

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[1] Ibid., p. 103.

[2] Francis R. St. John, Survey of Library Service for the Blind (New York: The William Byrd Press, Inc., 1957), p. 11.

CHAPTER II

REPORT OF THE STUDY

"It is estimated that there are at least twenty thousand blind children of school age in our country at the present time."[1] The actual number of blind adults and children in the United States, however, is undetermined because of lack of available information. Attempts have been made through the United States Census Bureau to secure this information, but the degree of blindness of a person is too difficult for the non-professionals to determine.

Art and children. In art all children use self expression when young, generally in the form of scribble drawings. They use first one hand, then the other, until the correlation of movement of their arm muscles and the marks on the paper develop meaning to them. The results of these artistic endeavors are the same whether they are made by the sighted or blind student. From here on "the separate stages of scribbling will differ in the two cases, for the technical process of drawing is essentially

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[1] Francis R. St. John, Survey of Library Service for the Blind - 1956 (New York: The William Byrd Press, Inc., 1957), p. 87.

different in the case of the weak sighted child,"[1] and the blind in comparison to the sighted child.

Teaching "awareness of relative size - big, little, tall, short"[2] is emphasized in the curriculum for the kindergarten in the Des Moines, Iowa, public schools. Emphasis is placed on "line drawings, figures, landscapes and still life in the first, second and third grades."[3] During the fourth, fifth and sixth grades "one point, two point and parallel perspective are introduced into the curriculum."[4]

The preliminary training received by the sighted students in drawing generally teaches them to analyze what they see, to become conscious of related objects, as well as to observe sizes. Art training for the blind child, however, often has not extended past that first experience of scribbling as a very young child. If he has had any art training it has been almost completely restricted to three dimensional forms such as the use of clay, sculpture and weaving.

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[1] Viktor Lowenfeld, Nature of Creative Activities (London: Routledge and Kegan Paul Ltd., 1939-1952), p. 18.

[2] Dr. John H. Harris (ed.), Art Education - Des Moines Elementary Schools (Des Moines: Des Moines Technical High School Press, 1961), p. 14.

[3] Ibid., p. 18.

[4] Ibid., p. 21.

I. PAST EXPERIMENTS

Few experiments have been attempted, and little has been written on the topic of space interpretation for the blind according to information procured by this author. Persons in charge of special education classes for the blind at Peabody College in Nashville, Tennessee, and Western Michigan University in Kalamazoo, Michigan, and the Chairman of the Research Division at the American Printing House for the Blind in Louisville, Kentucky, knew of little that had been written on the subject. Dr. Herbert Burgart at George Peabody College knew of some experiments that had taken place in California in which a group of sighted high school students created some embossed pictures. These were "shown" to the blind children; but, from his report, it was not too successful.

In 1930, an investigation was made by Ralph Merry and reported in The Teacher's Forum for Instructors of Blind Children, in which he was attempting to determine if blind children might recognize tactually, simple embossed pictures. He used ten embossed pictures of commonly known articles. Fifteen of the fifty children participating in this experiment recognized none of the pictures. Eleven of these were totally blind. Twenty-four recognized the wheel, twenty-three the house, eighteen the shovel, eighteen

the table, eighteen the chair, thirteen the fork, eight the apple, five the hat, four the cup and three the horn. His conclusions were that recognization is limited, but that the majority of the blind children were able to recognize pictures in sixty seconds or less. A maximum response time of one hundred and twenty seconds should be sufficient for further investigation, according to his report.

In 1932, an investigation was made by Dr. Frieda Fiefer Merry at the Upper and Lower School at Perkins Institute to determine the value of embossed pictures for blind children. This, too, was reported in The Teacher's Forum for Instructors of Blind Children. The conclusion to this report was that "if embossed pictures were included in Braille books it would be desirable to supplement them with adequate description."[1]

Again in 1933 Dr. Merry stated in a second article in the same magazine:

> Although exceptional blind individuals may be able to reproduce drawings employing the principle of perspective, it seems unwise to encourage any extensive teaching of pictures representing objects in three dimensions, unless used occasionally as a

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[1]Dr. Frieda Fiefer Merry, "A Further Investigation to Determine the Value of Embossed Pictures for Blind Children," The Teacher's Forum for Instructors of Blind Children, IV (May, 1932), 96.

source of enrichment for mentally superior blind children.[1]

Space interpretation. According to L. Moholy-Nagg in his book "Vision in Motion", "no new approach in rendering and interpreting space can ever be fully evaluated without the knowledge of traditional pictorial representations."[2] Since it is at present impossible for the blind to have a knowledge of "pictorial representations", other methods will have to be found for interpreting space for them if they are to understand it at all.

Because space is so all encompassing, it is impossible to conceive of it as a whole. The artist is restricted in his interpretation of space because of the media he might use. The personal element of selection and emphasis further restricts him in his attempt to make exact copies of nature.

The blind, however, are restricted because of the haptic nature of their handicap. Their "sight" is only as encompassing as the extension of their arms or the touch of their fingers.

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[1] Dr. Frieda Fiefer Merry, "A Further Investigation to Determine the Value of Embossed Pictures for Blind Children," The Teacher's Forum for Instructors of Blind Children, V (March, 1933), 73.

[2] L. Moholy-Nagg, Vision in Motion (Chicago: Wisconsin Cuneo Press, 1921), p. 153.

II. PRESENT USE OF EMBOSSED MATERIALS

Embossed writing has been proven through the years to be a highly successful means of communication for those who are visually handicapped, and yet there seems to have been little attempt to supplement this information with illustrations or diagrams. One of the recommendations made in "Survey of Library Services for the Blind" was that there be "more books of an informational character with a broader selection of materials which will supply the vocational and professional needs of the blind."[1]

Raised maps are presently being used in mobility instruction "to help the blind student overcome ambiguities and inaccuracies of his concepts of the world around him."[2] Through these maps he is able to have some concept of the locations of streets and obstacles throughout the cities. "It gives the student a framework for understanding the component parts of the city and their geographical relationships to each other."[3]

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[1] Francis R. St. John, Survey of Library Service for the Blind (New York: The William Byrd Press, Incorporated, 1957), p. 85.

[2] Gibson and others, loc. cit.

[3] "Perspective," Encyclopedia Britannica, XVII, 611.

"Like all maps, the raised map is a simplification of the environment and hence, in itself, contains some distortions of reality, but its use creates confidence in the student."[1] The student can develop assurance that he knows where he is when he starts and can continue to know where he is as he moves about. Confidence is a necessary ingredient to independence.

Such current maps of cities are almost nonexistent. "There are only three at the present time. These include:

> Marburg, Germany; London, England; and a portfolio of maps of the London Underground Railway. While a few other German city maps have been produced, we have yet to find anything except a hand made, nonreproducible map of all, or a part of any American city.[2]

There are "four basic types of maps available to the blind. They include: (1) Embossed paper maps; (2) Dissected relief or planimetric maps of wood or rubber; (3) Molded paper or plastic maps; and (4) Handmade, nonreproducible, special maps."[3]

Apparent success of the raised maps in communicating ideas and concepts encouraged this author in the belief that depth and space might have meaning for the visually

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[1] Gibson and others, loc. cit.

[2] John C. Sherman, "Needs and Resources in Maps for the Blind," The New Outlook for the Blind, IV (April, 1965), 131.

[3] Ibid., 130.

handicapped if a method of presentation and interpretation could be developed. Linear perspective in a simplified form might be the starting point for a better understanding of all that surrounds the blind.

III. PERSPECTIVE

Space and depth in drawings has been attempted by artists since the Stone Age. Fifteen hundred years ago reindeer herds were etched on bone with the legs and antlers sketched as if they were on the other side of the animal.

In their attempt to show perspective, the American Indian drew the front view, the left and right sides of a person or animal. It was as if they had drawn from three positions and placed the drawings side by side.

By the early Christian period the Roman depth in space was beginning to disappear, and the Byzantine period brought an almost complete removal of perspective to paintings. "Instead of showing the actual forms and space, they symbolized them, so that the figures overlapped. The atmosphere in which the figures moved was extremely limited by the neutral gold background and the sideway moving lines."[1]

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[1]Bernard S. Myers, Understanding the Arts (New York: Henry Holt and Company, 1958), p. 372.

Early in the Renaissance artists Leon Batista Alberto, Peolo Uccello, and Piero della Francesca developed the Italian fixed focus perspective. It was "Leonardo da Vinci who was the first to compile facts about perspective."[1] He established the following information. Perspective has:

> three essential types: linear perspective, which is the indication of volume in depth; aerial, or atmospheric perspective which the diminution of clarity of form and the object increases; and color perspective, which is the decrease of intensity of hue and the tendency of color to gray as objects recede.[2]

Basically, however, linear perspective has a "fixed horizontal line on the picture surface and a vanishing point or points on the horizon with the sides of an object receding to the point at the horizon."[3] A horizontal line drawn by the artist creates "the illusion of space and distance as far as the eye can see."[4] Perpendicular lines, however, do not converge to a vanishing point if they are parallel to the picture plane.

Joseph D'Amelio in his book, "Perspective Drawing Handbook," defines perspective in this manner:

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[1] "Perspective," Encyclopedia International, XIV, 212.

[2] Ibid.

[3] "Perspective," Encyclopedia Britannica, XVII, 611.

[4] "Perspective," Encyclopedia International, loc. cit.

> Perspective drawing is concerned with achieving a sense of space, of depth and of the third dimension, within the limits of the flat drawing surface. There are several visual principles which serve this end, such as diminution, foreshortening, convergence, and shade and shadow.[1]

Since shade can only be interpreted through the feel of the atmosphere by the blind and shadow concerns light rays, it would seem the other types of perspective would be more pertinent to this report.

A discription of various types of perspective follows:

Diminution. Objects appear smaller as their distance from the observer increases. If a person holds his hand upright and compares the size of a man standing twenty feet away to the size of his hand, the man appears to be about equal to the height of the hand. A person fifty feet away appears about an equal length of the thumb, and someone two hundred feet away about the size of the thumbnail.

> The cross ties of railroad tracks, autos in a parking lot, heads in a theatre, and the cars of a railroad train are just a few other examples of things that we know are approximately equal in size yet appear to diminish with distance. In a drawing this is a fundamental means of producing a sense of space and depth.[2]

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[1] Joseph D'Amelio, Perspective Drawing Handbook (New York: Tudor Publishing Company, 1964-1965), p. Introduction.

[2] Ibid., p. 9.

Foreshortening. "Lines and surfaces parallel to the observer's face show their maximum size. As they are revolved away from the observer they appear increasingly shorter."[1]

A pencil is true size when held upright. As it is turned away from the observer it appears shorter and shorter. Finally it appears as a small circle and only the end is seen.

A can has the appearance of a circle from the top. As it is turned away, more and more of the sides show and the top and bottom curve is in the same direction.

Convergence. When facing a brick wall, it appears as a rectangle; but if one stands next to it and looks at it while facing side view, it appears as if it were getting smaller at the opposite end.

It is the belief of this author that all of these techniques of presenting perspective could be taught to the blind by the embossed method.

IV. TECHNIQUES

In the investigation of techniques which might be used to create raised surfaces, the following information was revealed.

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[1] Ibid., p. 11.

> The embossing technique is a process of stamping in relief on paper. The female die, used on the bed of the press, etches intaglio on a zinc plate, and makes high type impressions. Impressions are made from the die into a soft composition mounted on a platen on the press. After this substance drys hard, this composition forms the male die. Sheets are fed into the press in the usual manner and are pressed between the two dies, which press or stamp the letter or design into the paper.[1]

Constant efforts are being made to simplify and to mechanize the embossing process of Braille. "Hand copied Braille is now being replaced for large editions and for interpointing to permit the use of both sides of a sheet of paper."[2] This reduces the bulk by about one half. At the present time "if a blind college student needs twenty books to use in writing a term paper and all were available in Braille, they would fill a dormitory room so completely that he would have no place to sleep."[3] Not many more than three books can be handled easily at one time.

Yet another method of using raised surfaces for illustrations for the sightless is a plastic material

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[1] R. Randolph Karch, Printing and Allied Trades (New York and Chicago: Pittman Publishing Corporation, 1931-1939), p. 177.

[2] Francis R. St. John, Survey of Library Service for the Blind, 1956 (New York: The William Byrd Press, Inc., 1957), p. 88.

[3] State of Iowa, 1961, Annual Report of the Commission for the Blind for the Fiscal Year July 1, 1960 - June 20, 1961, (Des Moines, Iowa: State of Iowa).

called "Relievo". This substance was suggested by Mr. Kenneth Jernigan, Director of the Iowa Commission for the Blind in Des Moines, Iowa. It is a liquid plastic in a tube and can be used for drawing, but the raised marks are nonreproducible. Elmer's Glue All and Glitter Magic are similar products for this process. Jeweler glue was, also, suggested as a product which would give a raised surface finish.

There is a photographic technique which "permits relative inexpensive imposition of images containing almost any desired detail. The image can be printed on an offset lithographic press or by the silk screen method."[1] If a resinous powder is dusted onto the wet ink image and then heated, a plastic-like solid raised surface occurs. By using this means and clear (transparent) materials, it would be feasible to overprint an array of tactual symbols on existing maps for the sighted to see and the blind to tactually "see".

> The introduction of small vacuum molding machines by the Thermoform Company, which makes possible reproduction of letter size ($8\frac{1}{2}$ x 11) copy in plastic for about 4.5 cents per copy has increased the practicality of this approach.[2]

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[1] Sherman, op. cit., 130

[2] Ibid., 131.

V. METHODS AND MATERIALS USED FOR SAMPLING

In order to test other types of materials which might be used in creating illustrations for samples, the author created several by using various materials and subjects which might be easily available. The basic materials were light weight Mylar plastic sheets of about .005 gage and pliable cardboard. Various techniques were used in the drawings. Glitter Magic, a liquid plastic in a tube, was used on the plastic sheets in an attempt to give a raised surface to the drawings. It was quite difficult to use this process to get a thin, even line.

Another material used was Elmer's Glue-All. Once again it was difficult to make fine, even lines. A single bristle from a stiff brush was tried as an applicator but was not too successful. A combination of Elmer's Glue and string was more successful but was quite time-consuming. It also proved to be quite tedious and difficult to reproduce a neat finished product.

Two other processes were used. Cardboard pressed with a semi-sharp instrument on the reverse side produced a raised surface on the opposite side, and the dot system similar to Braille was used. Both proved to be much more satisfactory than any of the other methods. It was much

easier to produce fine lines, not so messy, and saved time.

All but the last two processes would be impractical for mass production of illustrations but proved to be very satisfactory for individual pictures for testing. Embossed pictures created sommercially would perhaps be more practical for classroom study for projects such as linear perspective if it proves to have some value for the blind.

VI. METHODS OF TESTING AND RESULTS

An appointment was made with Mrs. Barbara Ollila at the Lighthouse for the Blind, 1850 W. Roosevelt Road, in Chicago, Illinois. A group of students consisting of five boys and five girls were present for the experiment. These students were either college preparatory students or shop trainees and averaged about seventeen years of age. Three of these students had been sighted at one time, but all had lost their sight by the time they were five to seven years old.

Some who had had art experiences had worked in finger painting, weaving, and making of mobiles and mosiacs. Others had had no art training or experience at all.

Nine of the group had worked with the raised surface maps, but only two said that they found them helpful. One of the students did mention that she had "seen" a hand-

produced map of the downtown area of Chicago and felt that she had a better understanding of the city now. Another student said that she had "seen" a map which was made of plastic, and the rivers and lakes were illustrated by dotted lines. Of the group only one had ever had perspective illustrations with vanishing points explained to them.

An explanation was given to the students of the meaning of the illustrations to be presented to them. They were told that the pictures were merely symbolic representations of the outlines of the objects they were to "see" and that it would be impossible to make life sized drawings if the items were larger than the paper upon which they were to be drawn. However, the objects could be reduced in size to fit the space. Also, full details of the interior of the outline drawn would be impossible to include in the pictures.

When the drawings were presented to the students, only one of each illustration was available; so each picture was presented to each student individually. One illustration showed a life size hand of a person and a picture of a man standing twenty feet away. He appeared to be the same size as the hand. Each student's hand was placed over the drawing of the hand, and their hand was outlined by the instructor. The drawing of the man

was then shown to the student tactually. All were very much impressed by this drawing and were able to understand it. The next was similar, but with the man standing fifty feet away. He appeared to be the size of the thumb. The third one showed the man two hundred feet away, and he was the size of the thumb nail. After seeing these drawings the students seemed fascinated by this "new concept." See Figure 1, Figure 2, and Figure 3, pages 27, 28 and 29.

Other illustrations were shown to the students including two boxes in perspective, Figure 4, page 30. This was much more difficult for them to comprehend, but with training the author felt that it would be possible for these students to understand how the boxes were placed on the flat surface. The sighted student, too, has trouble understanding perspective when it is first presented to him, but with training he is usually able to understand perspective and can demonstrate his knowledge in drawings. Perhaps with similar training the sightless could, also, understand.

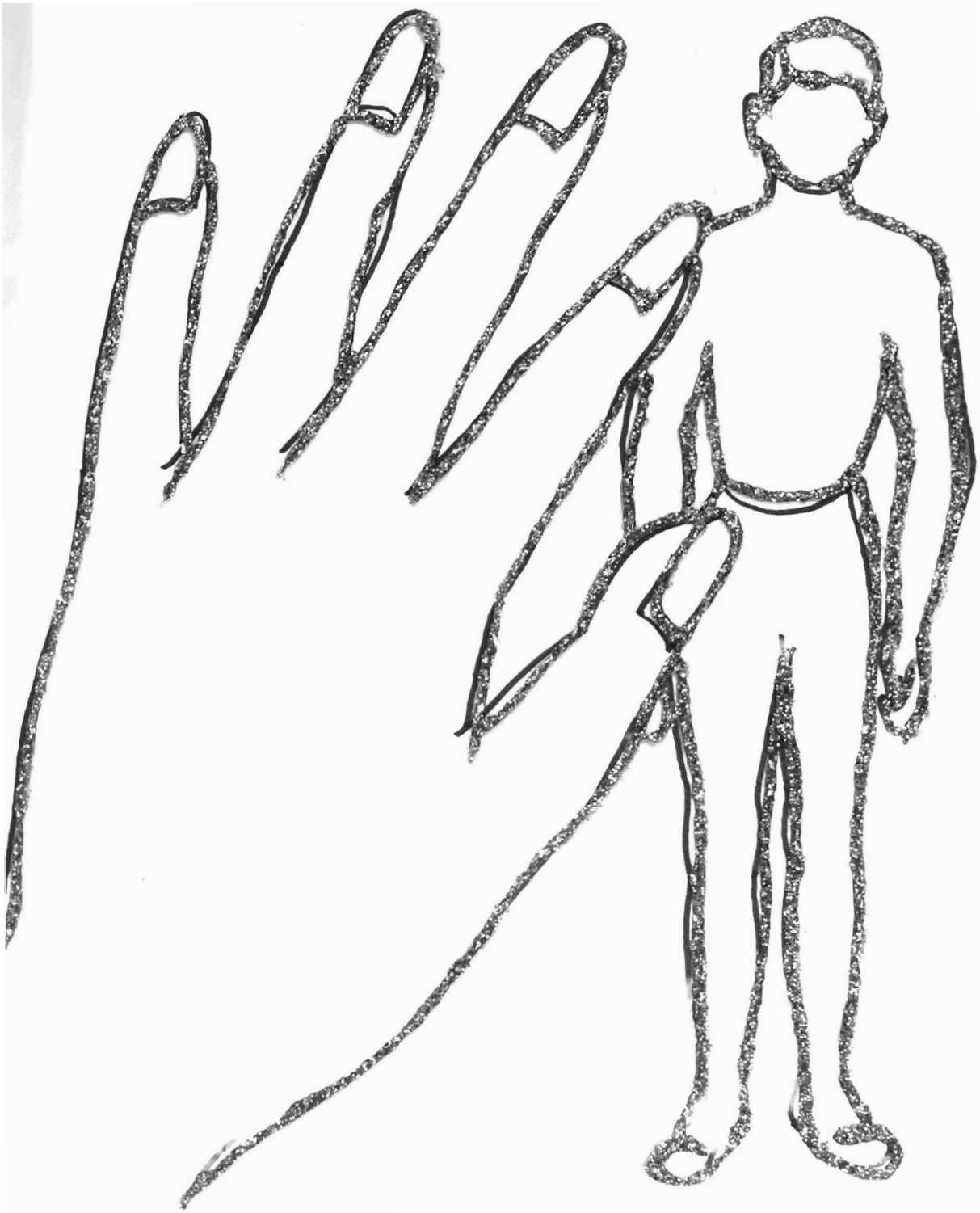
An illustration of a flight of stairs, Figure 5, page 31, was presented to two or three of the students. This, too, was more difficult for them to comprehend; but when the rise of the step was described as "the part you hit with your toe", they were more receptive to the illustration.

The original interview was to have lasted forty-five minutes, but by the conclusion of the demonstration two

hours and a half had passed. During this time other students and teachers at the Lighthouse heard of the demonstration and came to "see". There were a number of sighted employees of the organization who appeared and wanted to know about the illustration. At the conclusion of the afternoon about twenty-five persons had received instructions in perspective. All seemed to be very much interested and felt that this would be highly beneficial to the sightless.

A remark made by one of the blind students as she was leaving the room was "the sightless don't know what they don't know." This remark shows a basic problem of the blind. The sighted have failed to realize the vast amount of information which is taken so for granted and which should be made available to the blind. Much of this lack of knowledge is ignorance on the part of the sighted. The realization that such things as comparative sizes of animals might be unknown to the blind might not have occurred to the sighted. If but a few of these oversights in information can be explained and shown to the blind through bas-relief and linear perspective illustrations, a whole new concept for the appreciation and understanding of this world might be possible for the blind.

Illustrations which were used in the demonstration at the Lighthouse for the Blind in Chicago, Illinois, are to be found on the following pages.



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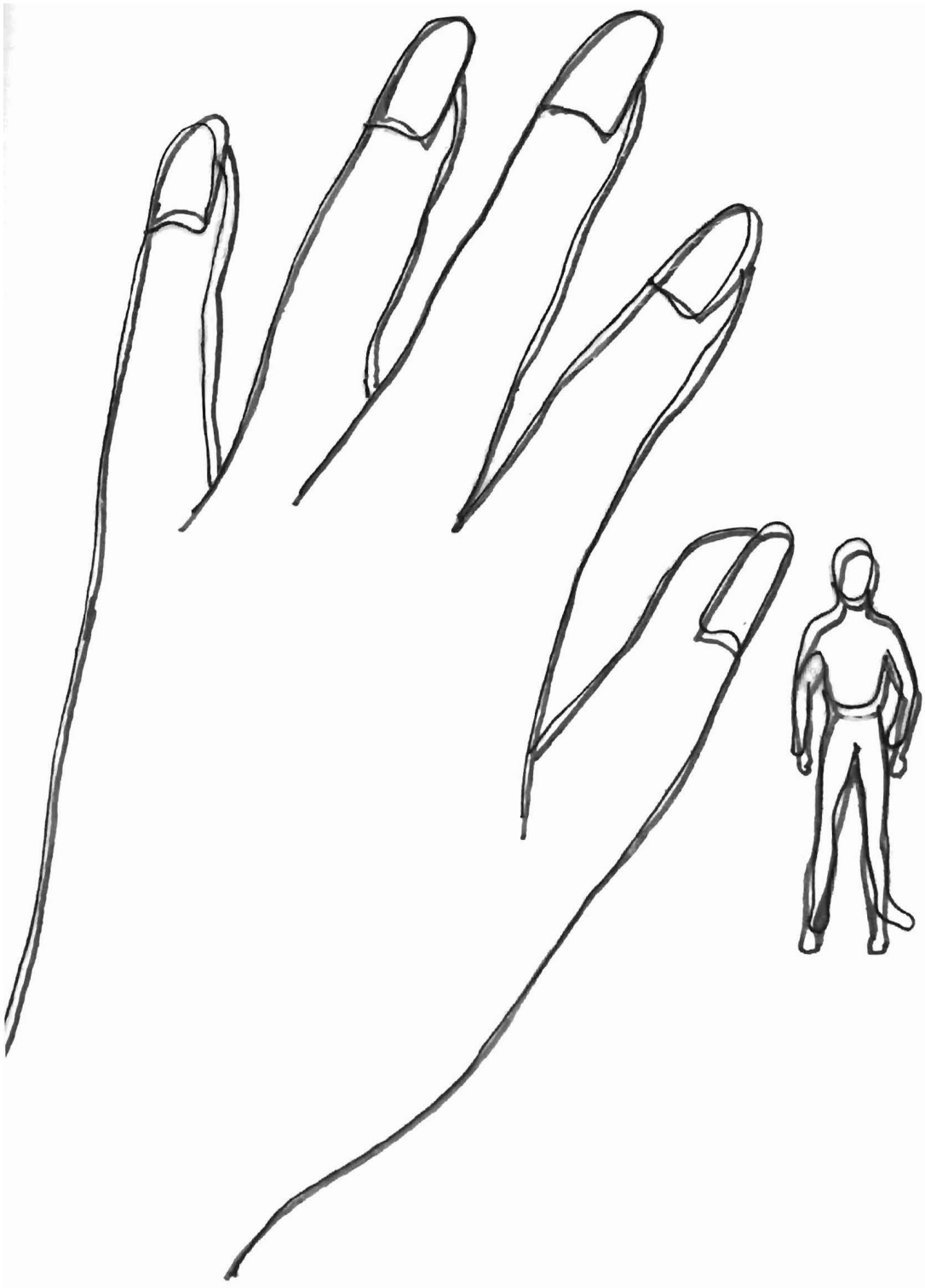

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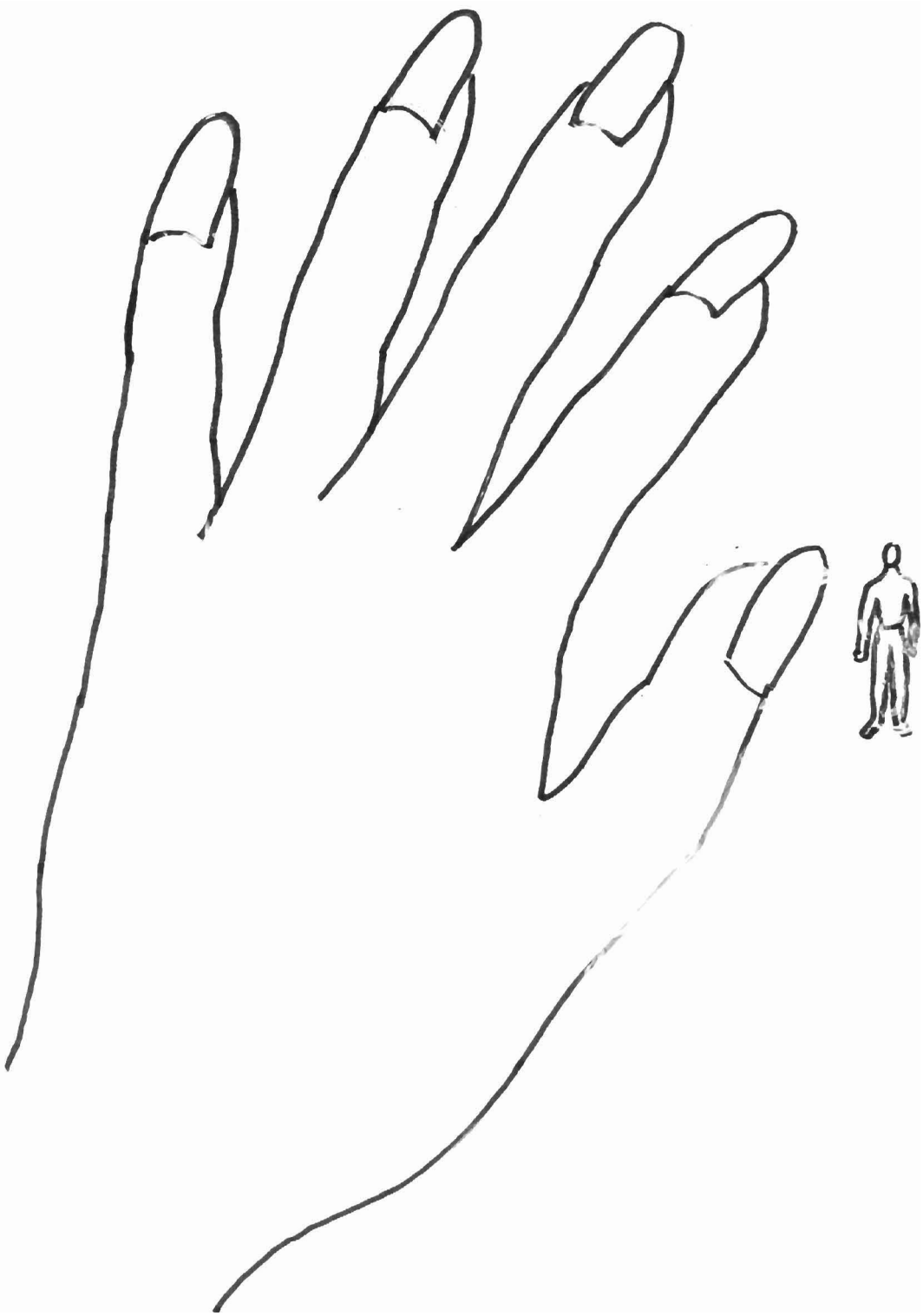

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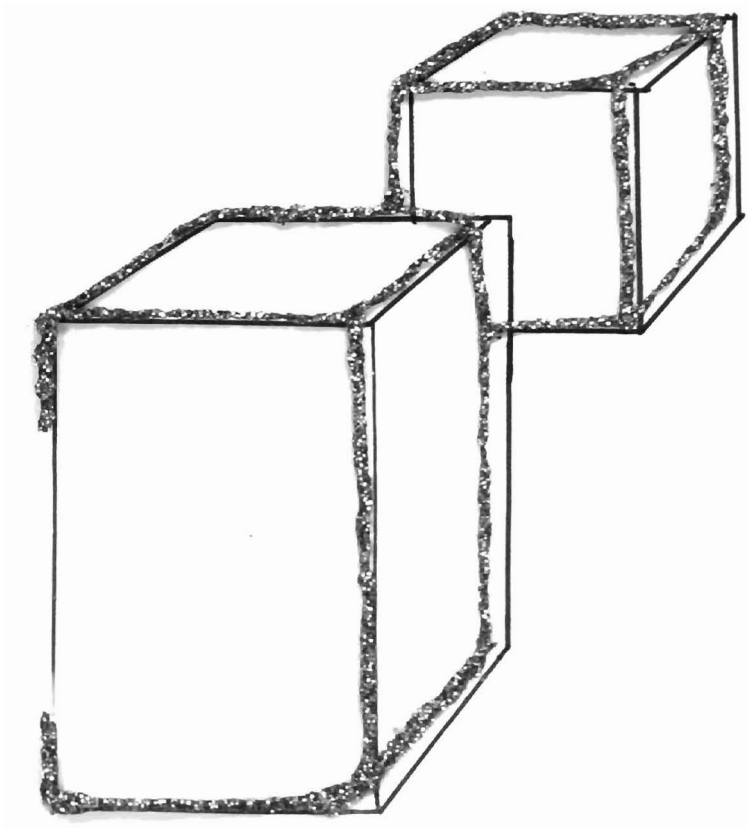

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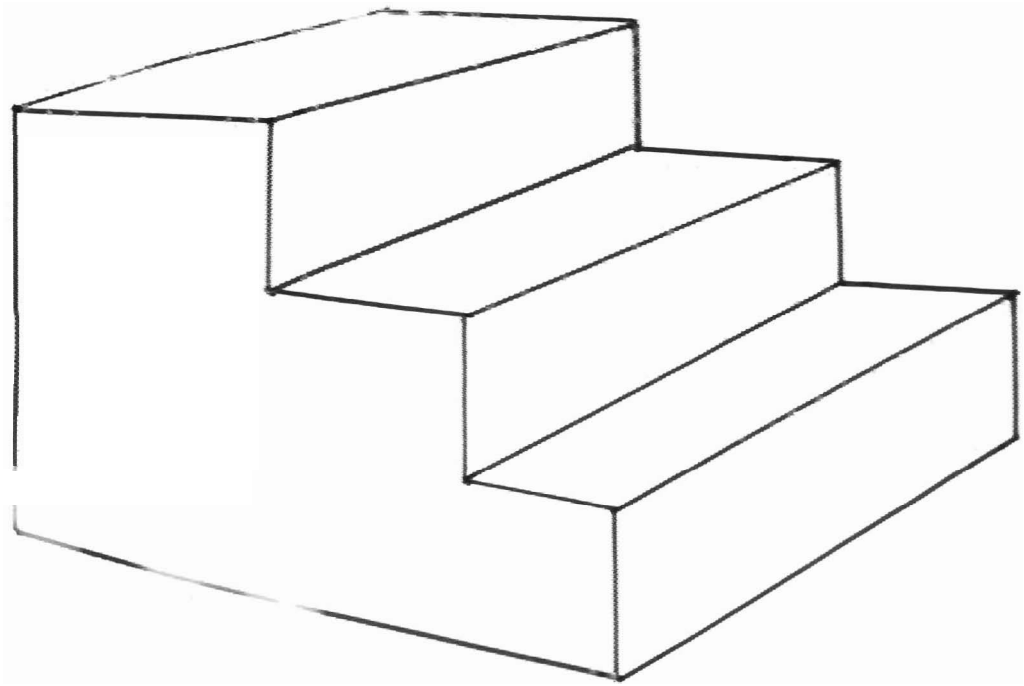

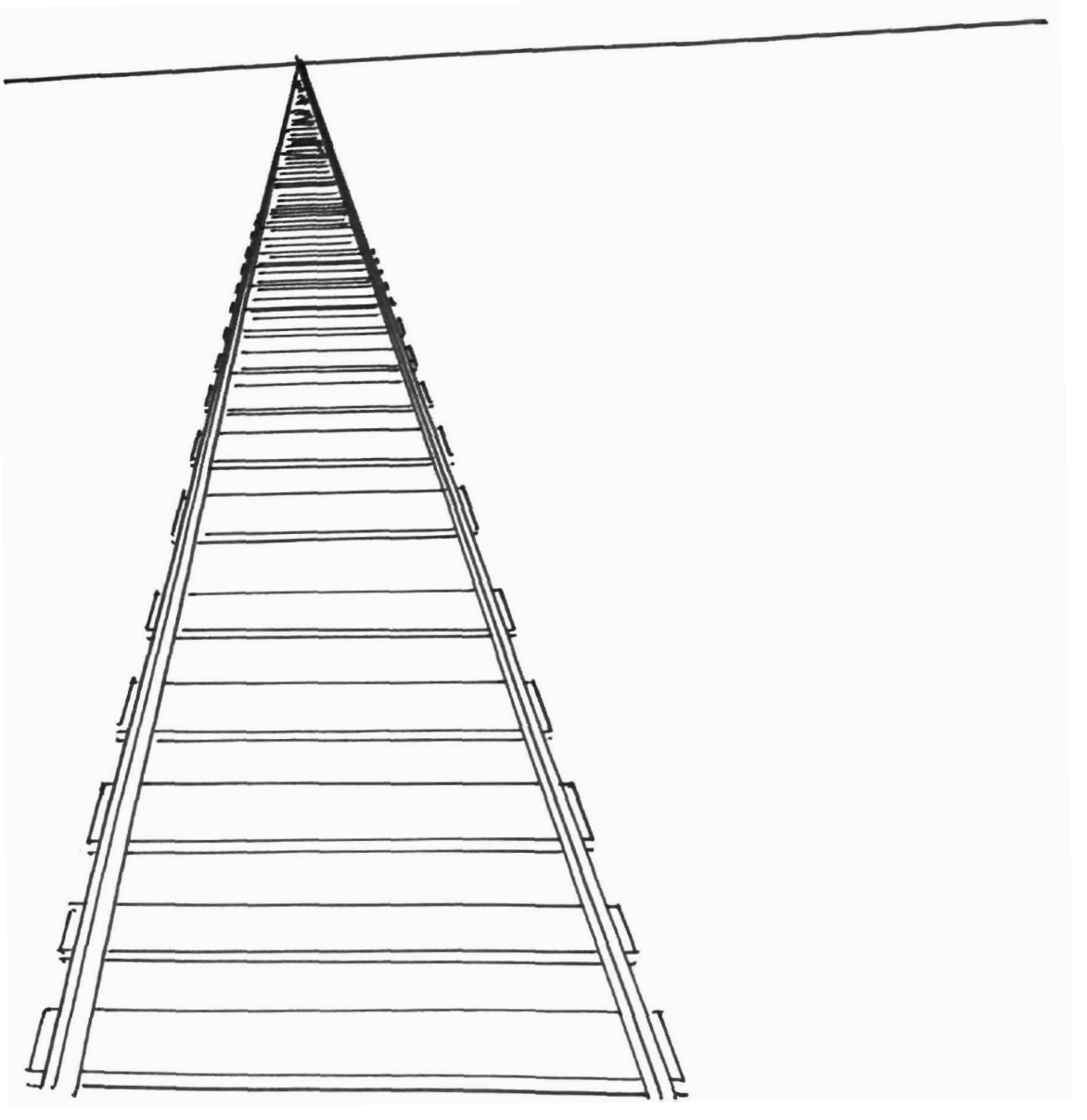

Figure 6. Railroad Tracks.

CHAPTER III

REVIEW, CONCLUSIONS AND RECOMMENDATIONS

The term "blind" has several meanings. There are those who are congenitally blind, meaning that they lacked vision at the time of birth. Others become blind soon after, while still others lack sight through illness or accident. The infirmities of old age with the deterioration of the circulatory system contribute to this affliction, as well as conditions such as cataracts and glaucoma. However, of the totally blind in the United States, "approximately twenty-five per cent of those are considered 'legally' blind."[1]

"Legally" blind is a definition used for the Federal Act of 1879, which established benefits for those persons who have 'vision with correction' at not more than 20/200."[2] This means that these persons can see only ten per cent of normal sight with corrective lenses. The theory of space interpretation through linear perspective is intended for these persons as well as the partially sighted.

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[1] Simon Hoffman, "Counseling the Client with Useful Vision," The New Outlook for the Blind, XXXXIX (February, 1955), 34.

[2] Winifred Hathaway, Education and Health of Partially Seeing Child (Columbia: Columbia University Press, 1947), p. 13.

I. REVIEW

For the blind "the perspective of touch is limited by the length of the arms."[1] For large objects they have only the fragmentary impressions of what they are feeling, and often these impressions are grossly inaccurate.

Through linear perspective the blind may not be able to "see" a complete object; but if the concept of depth and space on a two dimensional surface can be interpreted for them, it may open new ideas and impressions of their entire environment. They may be able to "see" their own homes for the first time from an exterior view as well as from the interior. Their history books might include pictures of the White House or the Statue of Liberty in perspective, or hundreds of other objects which have only "voice" meaning to them.

The problem was to find what studies have been made of perspective for the blind and to discover if, by the use of embossed linear perspective illustrations, space might be interpreted for, and by the visually handicapped.

II. CONCLUSIONS

It is because of lack of training of the sightless that this writer feels that they may be a whole new field of knowledge to be explored by and for the visually

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[1] Helga Lende, What of Blindness (New York: American Foundation for the Blind, 1941), p. 7.

handicapped. Their aesthetic appreciation of their environment might be enhanced through an understanding of perspective illustrations and, in turn, other types of pictures.

In the investigation of studies which have been made of embossed illustrations for the sightless, the author has noted the apparent lack of trained art personnel who have presented this material to the visually handicapped. The information obtained has been from a psychological view point rather than from an aesthetic understanding for the blind. Since most of the findings have been only moderately successful, little effort has been made to further the study and understanding of this subject.

The investigation made at the Lighthouse for the Blind in Chicago has further encouraged this author on the theory that space perception through raised linear perspective illustrations is possible for the visually handicapped to comprehend. Not only can they comprehend it but with further training they should be able to understand the concept of space for their own use. It is not a process which can be accomplished in one visit with the student, any more than it would be for the sighted to understand perspective illustrations after one lesson. A series of lessons presented individually to the blind using prepared illustrations can open new fields of

interest, understanding, and comprehension for the visually handicapped.

Lack of money for research has perhaps been a deterent in the study of illustrations for the blind in the past. Now, however, Research Fellowships are being sponsored by the American Printing House for the Blind in Louisville, Kentucky, and by George Peabody College in Nashville, Tennessee. These Fellowships are primarily for graduate students who are interested in the visually handicapped and their problems.

III. RECOMMENDATIONS

One or two tests on a group of students cannot prove the true results of what might be accomplished with a group of blind children. The following recommendations are offered:

1. Student teachers who are being educated to teach the blind should have art training in perspective themselves. Sighted teachers should be able to make illustrations of objects in the student's environment, and both sighted and blind teachers should be able to explain the illustrations to the students through tactual methods.
2. Individual instruction will be given when illustrations are first presented to the sightless students.

3. Individually made illustrations need to be tested at various grade levels to determine the information to be used and at what age level the students will receive the most benefits.
4. If it is discovered through these illustrations that the blind are able to grasp the meaning of linear perspective, then the teachers should request commercially made relief charts, city maps, and illustrated books, which the students may "see" while studying and reading.
5. Embossed linear perspective might be used for non-educational benefits as well as for educational benefits. They could be used for informational ideas and as illustrations for story books. Diagrams of building on college campuses should be of great assistance to the blind students.

Although considerably more study is needed on the subject of linear perspective for the visually handicapped, this writer has concluded from the study that it is possible for the blind to understand and comprehend space through illustrations. The possibilities of new knowledge for these people is unlimited, if the blind are only given the opportunity to study perspective and embossed illustrations.

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